An archery bow with a handle section, a hand portion and at least one stabilizer made up of a weight body and a rod member connected together. The stabilizer is attached to the front or belly side of the handle section and extends obliquely downwardly with respect to the longitudinal axis of the handle section in such a manner that the axial line of the rod member of the stabilizer is directed to the grip portion with the weight body disposed near the end of the stabilizer. The bow may have a second stabilizer attached to the handle section and extending out of the back side of the handle section perpendicular to the longitudinal axis thereof. The bow may also have another pair of stabilizers attached to the front or belly side of the handle section and each extending obliquely away from the longitudinal axis of the handle section and being symmetrically positioned with respect to a line perpendicular to the longitudinal axis of the handle section.

9 Claims, 3 Drawing Figures
COMBINATION OF ARCHERY BOW WITH SINGLE OR PLURAL STABILIZERS

BACKGROUND OF THE INVENTION

This invention relates to an archery bow provided with one or more stabilizers on its handle section.

When an arrow is notched on a bow and fully drawn, a vibration of small amplitude but of high pitch is caused in the bow because of the archer’s highly tensioned muscles. When the arrow is released, vibration or shock of greater intensity is caused in the bow because of quick recovery of the limb portions and the string of the archery bow to their original positions.

A stabilizer for an archery bow is employed for absorbing these vibrations or shock, and also for compensating any unbalance in the inertia moments which might exist around the hand grip portion of the archery bow especially in the right-and-left directions.

Research has been carried out on the attaching positions for the stabilizer around the handle-riser or handle section and one part of the findings have been utilized. However, in most cases, the stabilizers are attached to the archery bow in such a manner that the vibrating rod of the stabilizer is perpendicular to the longitudinal axis of the bow. As is well known, the vibrations in the archery bow are of different types after the arrow in released, and the vibration caused at the instant the arrow is released is in itself not so simple, and contains vibrational components in various directions. The stabilizer having one end of its vibrating rod fixed on the handle-riser of the archery bow vibrates in a direction along a circle with its center at the fixed position of the end, and the stabilizer cannot absorb any shock or vibration along the axial direction of the vibrating rod.

Accordingly, the archery bow having a stabilizer perpendicularly attached to the handle-riser can absorb vibration in up-and-down direction or in right-and-left or side-to side direction, but it cannot absorb vibration or shock in the forward-and backward direction.

SUMMARY OF THE INVENTION

Therefore, a primary object of the present invention is to provide an archery bow on which one or more stabilizers are attached in such a manner that they can absorb vibrations or shocks in practically all directions which might be caused in the archery bow.

Another object of the present invention is to provide an archery bow which has a center of gravity near the hand grip portion despite the stabilizer having a weight body, and thereby the bow exhibits excellent stability.

Still another object of the present invention is to provide an archery bow which is provided with a plurality of stabilizers without causing any obstacle to the operation of the bow.

According to the present invention, in one aspect thereof, the above described and other objects of the invention can be achieved by an archery bow wherein a stabilizer comprising a rod portion and a weight portion is inclinedly attached to the front face of its handle-riser so that the axial line of the rod portion is directed to the hand grip and the weight portion is located at the lower end of the rod portion, while another stabilizer of similar construction is attached horizontally on the back side of the archery bow.

In still another aspect of the invention, the objects of the invention can be achieved by an archery bow wherein a stabilizer comprising a rod portion and a weight portion is inclinedly attached to the front side of its handle-riser so that the axial line of the rod portion is directed to the hand grip and the weight portion is located at the lower end of the rod portion, while another stabilizer of similar construction is attached horizontally to the back side of the archery bow, and still another pair or stabilizers are attached on the front or belly side inclinedly in an up-and-down relationship.

The nature, principle, and utility of the invention will be more clearly understood from the following detailed description when read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a profile view of an archery bow provided with a stabilizer which constitutes a first embodiment of the present invention;

FIG. 2 is a profile view of an archery bow provided with two stabilizers which constitutes a second embodiment of the present invention; and

FIG. 3 is a profile view of an archery bow provided with four stabilizers which constitutes a third embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In all of the attached drawings, there is indicated a handle-riser or handle section 1 of a predetermined configuration having a hand grip portion 2. In ordinary case, the center of gravity of the handle-riser 1 or that of the bow is considered to be disadvantageous when it is located at a central point a of the hand grip 2 where the longitudinal central axis A — A and lateral central axis B — B of the hand grip 2 intersect, and the handle-riser of this invention is also so fabricated.

In the embodiment of the invention shown in FIG. 1, a stabilizer 4 is provided on the front side 3 of the handle-riser 1 in an inclined manner. Throughout this specification, the term “front side” or belly means that side of the bow which faces the archer when the bow is used, and the term “back side” means the opposite side of the front side. More specifically, the stabilizer 4 comprising a weight body 5 and a rod member 6 connected together in an integral manner is attached to the handle-riser 1 of the archery bow, for instance, by its screw threaded portion.

Furthermore, in this embodiment, the stabilizer 4 is attached to the handle-riser 1 in such a manner that the axial line C — C of the rod member 6 of the stabilizer 4 is directed to the above described central point a of the grip 2 or the center of gravity of the bow, intersecting with the longitudinal axis A — A of the handle-riser 1 at an angle of about 35°. In other words, the rod member 6 of the stabilizer 4 is disposed obliquely downwardly from the handle-riser 1 so that the weight body 5 is located at the lowermost end of the rod member 6.
Since the stabilizer 4 is attached obliquely to the front side 3 of the handle-riser 1, when a vibration or shock is caused in the handle-riser 1 in up-and-down direction, right-and-left direction, or in the forward-and-afterward direction, the stabilizer 4 can be thereby vibrated for absorbing the vibration or shock of the handle-riser 1 and reducing the same. Furthermore, because the weight body 5 is located downwardly, the existence of the stabilizer below the hand grip 2 on the front side thereof does not cause any obstacle in arrow shooting, and because the axial line C — C of the rod member 6 is directed to the central point a of the grip 2 where the center of gravity of the archery bow is located, the balance of the archery bow is not disturbed by the operation of the stabilizer.

In another embodiment of the invention shown in FIG. 2, another stabilizer 4a similar to that employed in the first embodiment of the invention and having a weight body 5a and a rod member of the integrally connected with each other is attached horizontally on the back side 7 of the handle-riser 1 at a position lower than the grip 2. In this embodiment, since the stabilizer 4a is attached perpendicularly to the longitudinal axis of the handle-riser 1 in addition to the stabilizer 4 attached thereto obliquely, any vibration in up-and-down direction, right-and-left direction, or a combination thereof in the handle-riser 1 can be absorbed more effectively.

In still another embodiment of the invention shown in FIG. 3, the handle-riser 1 in accordance with the second embodiment shown in FIG. 2 is further provided with two stabilizers 4b, 4b of similar constructions at upper and lower positions respectively on the front side of the handle-riser. The stabilizers 4b, 4b each comprising a weight body 5b and a rod member 6b connected together integrally are attached to the upper and lower positions of the handle-riser in an oblique manner forming an angle of approximately 25° to the horizontal axis B — B, which is perpendicular to the longitudinal axis A — A, so that the balance of the handle-riser 1 is maintained by the stabilizers 4b, 4b symmetrically disposed with respect to the horizontal axis B — B.

Since the two stabilizers 4b, 4b are provided symmetrically and obliquely in the third embodiment of the invention besides the above described stabilizers 4 and 4a, the absorbing and reducing effect of the forward-and-afterward directed vibration or shock can be further improved. In some cases, the stabilizer 4 may be omitted from the bow shown in FIG. 3 and only a combination of stabilizers 4a and 4b may be employed.

In all of the above described embodiments of the present invention, one or more of stabilizers are obliquely provided on the front side of the handle-riser for absorbing vibration or shock in the forward-and-afterward direction of the archery bow whereby the archery bow can be further stabilized and the vibration of the bow can be further damped. In another aspect, an additional stabilizer is provided horizontally on the back side of the handle-riser, whereby the vibration and shock in the up-and-down direction and the right-and-left direction can be absorbed more effectively, and an archery bow further stabilized and will not generate a string vibrating sound.

What is claimed is:
1. An archery bow having a handle section, the center of gravity of the bow in the handle section, said handle section being provided with a hand grip portion, said bow having only one stabilizer wherein said only stabilizer comprises a single weight body and a rod member rigidly connected together in an integral manner, said handle section having front (belly) and back sides, said stabilizer rod member being attached rigidly and non-adjustably to said front side of said handle section and extending obliquely and downwardly with respect to the longitudinal axis of said handle section, the center line of said rod member being directed toward said hand grip portion and passing through the center of gravity of said bow.
2. An archery bow as claimed in claim 1 further comprising a second stabilizer having a weight body and a rod member, said second stabilizer rod member being attached to said back side of said handle section and extending perpendicularly to the longitudinal axis of said handle section.
3. An archery bow as claimed in claim 2 further comprising a pair of third stabilizers each having a weight body and a rod member, said rod members of said pair of third stabilizers being attached, respectively, to said front side of said handle section at upper and lower positions thereof and extending away from said handle section in an oblique manner with respect to the longitudinal axis of said handle section.
4. An archery bow as claimed in claim 3 wherein said stabilizer of said pair of third stabilizers is disposed symmetrically with respect to a line perpendicular to the longitudinal axis of said handle section.
5. An archery bow as claimed in claim 1 further comprising a pair of second stabilizers each having a weight body and a rod member, said rod members of said pair of second stabilizers being attached, respectively, to said front side of said handle section at upper and lower positions thereof and extending away from said handle section in an oblique manner with respect to the longitudinal axis of said handle section.
6. An archery bow as claimed in claim 5 wherein said stabilizers of said pair of second stabilizers are disposed symmetrically with respect to a line perpendicular to the longitudinal axis of said handle section.
7. An archery bow as claimed in claim 6 wherein each stabilizer of said pair of second stabilizers is disposed at an angle of about 25° to a line perpendicular to the longitudinal axis of said handle section.
8. An archery bow as claimed in claim 1 wherein said stabilizer is disposed at an angle of about 35° to the longitudinal axis of said handle section.